

Appln. No. 09/823,363  
Amdt. dated October 5, 2005  
Reply to Office Action dated July 5, 2005

### R E M A R K S / A R G U M E N T S

Reconsideration of the present application, as amended, is respectfully requested.

The July 5, 2005 Office Action and the Examiner's comments have been carefully considered. In response, the claims are amended, and remarks are set forth below in a sincere effort to place the present application in form for allowance. The amendments are supported by the application as originally filed. Therefore, no new matter is added.

### ALLOWABLE SUBJECT MATTER

The Examiner's indication that claims 7 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims, is acknowledged and appreciated. Claims 7 and 14 are not rewritten in independent form at this time in view of the asserted allowability of claims 17 and 18 from which claims 7 and 14 depend. Applicants reserve the right to place claims 7 and 14 in independent form in response to a subsequent Patent Office communication.

Appln. No. 09/823,363  
Amdt. dated October 5, 2005  
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#### PRIOR ART REJECTIONS

In the Office Action, claims 2-6, 9-13 and 15-19 are rejected under 35 USC 102(a) as being anticipated by USP 6,167,092 (Lengwehasit).

In response, remarks are set forth below to more clearly explain how the present claimed invention is patentable over the cited reference. Claims 17 and 18 recite "determining at least one of the horizontal complexity and the vertical complexity of said MB by determining the value of a predetermined one of the coefficients, wherein said predetermined coefficient represents the highest of at least one of horizontal frequency and vertical frequency."

The present claimed invention as defined by claims 17 and 18 determines the horizontal and/or vertical complexity of the macroblock of pixels corresponding to the received array of DCT coefficients by determining the value of a predetermined coefficient in the received array of DCT coefficients without scanning the entire array. After this, a sub-array within the DCT coefficient array is IDCT coded in order to reconstruct the original macroblock of pixels, where the size and position (within the DCT coefficient array) is selected based on the value of the predetermined coefficient.

Appln. No. 09/823,363  
Amnt. dated October 5, 2005  
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More specifically, referring to Fig. 3 of the present application, for each MB of each frame, an 8 x 8 array of DCT coefficients is received (Step 302), typically from a storage device or transmission device. In Step 304 the value of a predetermined coefficient (in an embodiment of the present application coefficient 56; see Fig. 1) is determined. This is a predefined evaluation of the 8 x 8 array which does not necessitate scanning the entire array to determine the location of the last nonzero coefficient as was conducted in the prior art. Coefficient 56 is associated with the highest frequency of horizontal motion (see the present application at page 6, line 25 - page 7, line 1). Coefficient 56 is selected to determine computational complexity when seeking to minimize horizontal degradation while permitting vertical degradation (since vertical degradation occurs much less frequency in typical programs as explained in the present application at page 8, line 4 - page 9, line 2).

In Step 306, according to a predetermined association of the maskings for subsets of DCT coefficients (Figs. 2A-H) with the value of coefficient 56, a predetermined one of the maskings is selected. In Step 308 the selected subset of DCT coefficients is used in an inverse DCT operation to recover an approximation of the original macroblock. With the dynamic selection of

Appln. No. 09/823,363  
Amdt. dated October 5, 2005  
Reply to Office Action dated July 5, 2005

coefficient subsets according to the value of coefficient 56, lower complexity is used when there is not much horizontal motion, and higher complexity is used to minimize degradation for various greater amounts of horizontal motion. In one embodiment of the invention, two subset selections are employed (the 55% complexity subset of Fig. 2G for values of coefficient 56 below a predetermined threshold, and the 86% complexity subset of Fig. 2C for values at or above the predetermined threshold).

Lengwehasit selects from a set of IDCT algorithms ("pruned IDCT algorithms") to apply to the DCT coefficient array. Lengwehasit scans the entire PCT coefficient array, finds the last nonzero coefficient in the DCT coefficient array (or string) and uses the location (not value) of that last nonzero coefficient within the array (string) to select the particular pruned IDCT algorithm to utilize.

Lengwehasit requires that the entire array (string) be scanned to determine the location of the last non-zero coefficient. Lengwehasit uses the location (not value) of the last nonzero coefficient to determine which pruned IDCT algorithm to use. It is noted that the last nonzero coefficient is not predetermined, and may change with each array.

In contrast, the present claimed invention as defined by claims 17 and 18 only determines the value of a predetermined

Appln. No. 09/823,363  
Amdt. dated October 5, 2005  
Reply to Office Action dated July 5, 2005

coefficient (the location of the coefficient does not change, i.e., it is predetermined, as opposed to Lengwehasit wherein the coefficient is not predetermined but changes depending upon the location of the last nonzero coefficient) to select the size and position of the sub-array to be IDCT coded. That is, claims 17 and 18 do not require the entire array to be scanned, and the location of the coefficient whose value will be read is predetermined, i.e., fixed - for example, in one embodiment where a 8 x 8 array is employed, it will always be the value of the coefficient at location 56 that is determined. In contrast, the method of Lengwehasit must find the location of the last nonzero coefficient within the array (string), and, once found, Lengwehasit does not determine the value of that last nonzero coefficient. Moreover, the location of the coefficient used by Lengwehasit changes depending upon the location of the last nonzero coefficient.

Lengwehasit does not disclose, teach or suggest determining the horizontal and/or vertical complexity of the original macroblock of pixels by determining the value of a particular predetermined coefficient. Lengwehasit does not disclose, teach or suggest having the size and/or single position of a subset (or sub-array) within the received DCT coefficient array which will be IDCT coded being selected by determining the value of a

Appln. No. 09/823,363  
Amdt. dated October 5, 2005  
Reply to Office Action dated July 5, 2005

particular predetermined coefficient. In fact, Lengwehasit does not disclose, teach or suggest determining the individual value of any particular DCT coefficient as part of the decoding system or method.

That is, Lengwehasit does not disclose, teach or suggest a method of decoding a video signal or a system for decoding a video signal including, inter alia:

determining at least one of the horizontal complexity and the vertical complexity of said MB by determining the value of a predetermined one of the coefficients, wherein said predetermined coefficient represents the highest of at least one of horizontal frequency and vertical frequency; and/or

performing inverse DCT (IDCT) coding on a sub-array of coefficients within the DCT coefficient array in order to reconstruct said macroblock, wherein the size and position of said sub-array depends on the determined value of the predetermined one of the coefficients having the highest of at least one of horizontal frequency and vertical frequency. (See claim 17, lines 8-18; and claim 18, lines 9-19).

None of the other references of record close the gap between the present claimed invention as defined by claims 17 and 18 and Lengwehasit. Therefore, claims 17 and 18 are patentable over all of the references of record when taken either alone under 35 USC

Appln. No. 09/823,363  
Amdt. dated October 5, 2005  
Reply to Office Action dated July 5, 2005

102 or in combination under 35 USC 103.

Claims 2-7 and 9-16 are either directly or indirectly dependent on claims 17 and 18 and are patentable over the cited references in view of their dependence on claims 17 or 18, and because the references do not disclose, teach or suggest each of the limitations set forth in the dependent claims.

Based at least on the foregoing, claims 2-7 and 9-19 are in form for immediate allowance, which action is earnestly solicited.

#### NEW CLAIMS

New claims 20 and 21 are added to the present application. Claims 20 and 21 further define and limit the invention defined by claims 17 and 18 wherein the entire array of DCT coefficients is not scanned prior to determining the value of the predetermined one of the coefficients. Support for claims 20 and 21 can be found throughout the present application, for example in the description of an embodiment of the invention with reference to Fig. 3 at page 10, line 7 - page 11, line 9.

New claims 22-23 are added to the present application. Claims 22 and 23 further define and limit the invention defined by claims 17 and 18 wherein the location of the predetermined one of the coefficients is predetermined. Support for claims 22 and

Appln. No. 09/823,363  
Amdt. dated October 5, 2005  
Reply to Office Action dated July 5, 2005

23 can be found throughout the present application, for example in the description of an embodiment of the invention with reference to Fig. 3 at page 10, line 7 - page 11, line 9.

Submitted herewith is a Credit Card Authorization Form in the amount of \$100.00 for the addition of two (2) dependent claims above the highest number of dependent claims for which payment was previously made. If any additional fees are due, or if any overpayment has been made, please charge or credit Deposit Account No. 14-1270 for such sum.

Claims 20-23 are patentable over the reference of record in view of their dependence on claim 17 or 18, for the reasons, inter alia, set forth above, and because the cited reference does not disclose, teach or suggest each of the limitations set forth in claims 20-23.

\* \* \* \* \*

If the Examiner disagrees with any of the foregoing, the Examiner is respectfully requested to point out where there is support for a contrary view.

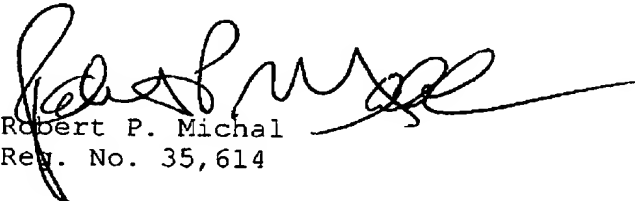
Entry of the amendment, allowance of the claims, and the passing of the application to issue are respectfully solicited.



Appln. No. 09/823,363  
Amtd. dated October 5, 2005  
Reply to Office Action dated July 5, 2005

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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October 5, 2005

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